IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:		Docket No.:	TI-31034
	Michelle A. Miller, et al.	Art Unit:	2672
Serial No.:	09/742,902	Examiner:	Thu Thao Havan
Filed:	December 20, 2000	Date:	July 1, 2004

Confirmation No.: 8958

For: TRACING AND STORING POINTS OF INTEREST ON A GRAPHING CALCULATOR

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

MAILING CERTIFICATE UNDER 37 C.F.R. §1.8(A)

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Ann Trent
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APPEAL BRIEF PURSUANT TO 37 C.F.R. § 1.192

Dear Sir:

Further to the Notice of Appeal mailed on July 1, 2004 (Paper No. 17), this is Appellant's(s') Appeal Brief, hereby submitted in triplicate in compliance with 37 C.F.R. § 1.192.

Real Party in Interest under 36 C.F.R. §1.191(c)(1)

The real party in interest in this application is Texas Instruments Incorporated, a corporation of the State of Delaware.

Related Appeals and Interferences under 36 C.F.R. §1.191(c)(2)

There are none.

Status of Claims:

Claims 1-22 were originally filed and are rejected.

Status of Amendments:

No amendment was filed subsequent to final rejection.

Summary of Invention:

The present invention is a graphing calculator which allows a user, such as a student, to easily identify and work with "points of interest." A point of interest is defined in the Specification at p.6, ll. 14-15, as "an intersection point of any combination of solid and dotted lines." A solid line is the graphical representation of a function, which includes an equal sign ("="), while a dotted line is the equality line related to an inequality. For example, for the inequality X<5, a dotted line would be displayed for X=5, even though the points on X=5 are not a member of the inequality X<5.

The present invention uses a "trace" like function that lets the user quickly jump from one intersection point, i.e., point of interest, to the next on a display screen. This is recited in each of the independent Claims 1, step (d), Claim 8, steps (c) and (d), and Claim 15, step (d). The user interface of the calculator of the present invention helps the user to more readily see and understand the concepts involved with line/function intersection. Some embodiments include this user functionality in a software application package that is executed on a graphing calculator.

Issue:

There is one issue on appeal, specifically, whether Claims 1-22 are unpatentable under 35 U.S.C. §103(a) over Tanaka et al. (U.S. Patent No. 5,907,317) in view of Akaza et al. (U.S. Patent No. 5,739,823).

Grouping of Claims:

Claims 1-22 stand or fall together.

Argument:

The rejection is based on the allegation that all of the rejected claims are obvious over Tanaka et al. in view of Akaza et al. It is pointed out above that each independent claim, Claim 1, 8 and 15, recites the step of allowing a user to jump a cursor between intersection points with a single key command on a display screen. In the Final Office Action dated June 6, 2004 (hereinafter "FOA"), it was admitted that "Tanaka fails to explicitly teach as claimed allowing the user to jump the cursor between intersection points with a single key command on the points of interest display screen." (FOA, p. 4, ll. 3-5.) It was then alleged in the FOA that "Akaza, on the other hand, teaches allowing the user to jump the cursor between intersection points with a single command on the points of interest display screen." (FOA, p. 4, ll 5-7.) Applicants respectfully dispute this allegation.

Cited in support of this allegation are these sections from Akaza et al.: column 4, lines 46-55; column 7, line 55 to column 8, line 15; column 10, lines 37-47; column 13, line 59 to column 14, line 49; and Figs. 4, 6a and 10a. (FOA, p.4, ll. 7-8.) However, a careful reading of these sections reveals that, while cursor key operation is described, the function implemented in response to such key operation is very different from the claimed allowing a user to jump a cursor between intersection points with a single key command on a display screen.

Actually, two different functions are implemented in response to such key operation. The first is the selection of a functional inequality, described, e.g., at column 7, line 64, to column 8, line 3: "Thereafter, each time the cursor key is operated, data on an expression selection frame is moved from the display register 18 through the color data memory 15 such that the frame selectively

encloses and displays one of the two functional inequalities 'Y124 $X^{2,}$ [sic: $Y1 \geq X^2$] and 'Y223 X' [sic: $Y2 \leq X$] sequence in this order. In this case, the inequality 'Y2≤X' is selected (steps C20-C22)." In conjunction with this selection,the is moved cursor to the graphical representation of that functional inequality (column 10, lines 37-42). After a functional inequality is selected in this manner, operating the "color" key changes the displayed color of the graphical representation of that functional inequality (column 8, lines 4-22; column 10, lines 43-47). This neither teaches nor suggests anything about causing a cursor to jump between intersection points with a single key command on a display screen.

The second function implemented in response to a cursor key operation is the sequential movement of the cursor along the graphical representation of a functional inequality, implemented by operating the rightward feed key, assuming that to be a cursor key (column 13, lines 59-65). Again, this neither teaches nor suggests anything about causing a cursor to jump between intersection points with a single key command on a display screen.

Of course, there is a third function implemented in response to cursor key operation, that is, its usual function of causing the cursor to navigate pixel-by-pixel around the display screen. An example of using this kind of operation is described at column 14, lines 33-48, in conjunction with a graph enlargement function. Obviously, this neither teaches nor suggests anything about causing a cursor to jump between intersection points with a single key command on a display screen.

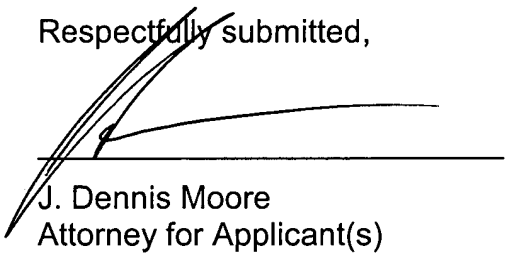
Thus, Akaza et al. fails to supply the teachings missing from Tanaka et al.

Accordingly, for the reasons set forth above it is respectfully submitted that all of the independent claims in this case, Claims 1, 8 and 15, are neither anticipated nor rendered obvious by either Tanaka et al. or Akaza et al. either considered alone or in combination, and that therefore these claims are allowable. All of the other claims on appeal depend, either directly or indirectly from one of Claims 1, 8 and 15, and so are allowable as well for the same reasons, as well as for the additional limitations found therein.

Relief Sought:

For all of the reasons set forth hereinabove, reversal of the final rejection of Claims 1 - 22 and the allowance of those claims are respectfully requested.

Respectfully submitted,



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Appendix 1
(Copy of Claims involved in the Appeal)

1. A graphing calculator having a points of interest user interface comprising:

a screen capable of displaying at least straight lines in any direction and a cursor;

a key panel having keys at least capable of selecting positions of said cursor and moving said cursor horizontally or vertically on said screen;

a processor for executing programming that provides a points of interest user interface having the following steps:

a) providing an input display to allow the user to define a plurality of equations, inequalities and vertical lines,

b) graph the defined equations, inequalities and vertical lines,

c) provide a points of interest display screen, and

d) allow the user to jump the cursor between intersection points with a single key command on the points of interest display screen.

2. The graphing calculator of Claim 1, wherein said processor is further programmed to store the location of the cursor at desired points with a store command that comprises a single key stroke.

3. The graphing calculator of Claim 2, wherein said processor is further programmed to allow the user to display the stored points of interest and use the stored points of interest for other calculator functions.

4. The graphing calculator of Claim 1, wherein said processor is further programmed to input equations, inequalities and lines using a Y=Editor and an X=Editor.

5. The graphing calculator of Claim 1, further comprising an indication on the display of the current coordinates of the cursor.

6. The graphing calculator of Claim 1, further comprising an indication on the display of which equation, inequality or vertical lines contributed to the point of interest indicated at the cursor location.

7. The graphing calculator of Claim 6, wherein the indication on the display of which function or vertical lines contributed to the point of interest indicated at the cursor location includes the intersection symbol for equations that include the line and does not use the intersection symbol for strict inequalities.

8. A graphing calculator having a points of interest display comprising:

a screen capable of displaying at least straight lines in any direction and a cursor;

a key panel having keys at least capable of selecting positions of said cursor and moving said cursor horizontally or vertically on said screen;

a processor for executing points of interest programming that instructs said processor to perform the following steps:

a) providing an input display to allow the user to define equations and vertical lines,

b) graph the defined equations and vertical lines,

c) provide a points of interest display,

d) allow the user to jump the cursor between intersection points with a single key command which moves the cursor to another point of interest with each key activation, and

e) allow the user to store the location of the cursor at desired points with a store command.

9. The graphing calculator of Claim 8, wherein said processor is further programmed to allow the user to display the stored points of interest and use the stored points of interest for other calculator functions.

10. The graphing calculator of Claim 9, further comprising an indication on the display of the current X and Y coordinates of the cursor.

11. The graphing calculator of Claim 10, further comprising an indication on the display of which function or vertical lines contributed to the point of interest indicated at the cursor location.

12. The graphing calculator of Claim 11, wherein the indication on the display of which function or vertical lines contributed to the point of interest indicated at the cursor location includes the intersection symbol for equations that include the line and does not use the intersection symbol for strict inequalities.

13. The graphing calculator of Claim 8 further comprising an algorithm to compute intersection points using a numerical root-finder which uses XMIN and XMAX for the graph window as the upper and lower bounds on the solution and the initial guess taken as the current cursor position.

14. The graphing calculator of Claim 8 further comprising an algorithm to compute intersection points of linear inequalities to find the points of interest around the boundary of a solution set to the linear inequalities by iterating the Simplex algorithm.

15. A software user interface for a graphing calculator having the following steps:

a) providing an input display to allow the user to define a plurality of equations, inequalities and vertical lines,

b) graph the defined equations, inequalities and vertical lines,

c) provide a points of interest display screen, and

d) allow the user to jump the cursor between intersection points with a single key command on the points of interest display screen.

16. The user interface of Claim 15, wherein said processor is further programmed to store the location of the cursor at desired points with a store command that comprises a single key stroke.

17. The user interface of Claim 16, wherein said processor is further programmed to allow the user to display the stored points of interest and use the stored points of interest for other calculator functions.

18. The user interface of Claim 15, wherein said processor is further programmed to input equations, inequalities and lines using a Y=Editor and an X=Editor.

19. The user interface of Claim 15, further comprising an indication on the display of which equation, inequality or vertical lines contributed to the point of interest indicated at the cursor location.

20. The user interface of Claim 19, wherein the indication on the display of which function or vertical lines contributed to the point of interest indicated at the cursor location includes the intersection symbol for equations that include the line and does not use the intersection symbol for strict inequalities.

21. The user interface of Claim 15 further comprising an algorithm to compute intersection points using a numerical root-finder which uses XMIN and XMAX for the graph window as the upper and lower bounds on the solution and the initial guess taken as the current cursor position.

22. The user interface of Claim 15 further comprising an algorithm to compute intersection points of linear inequalities to find the points of interest around the boundary of a solution set to the linear inequalities by iterating the Simplex algorithm.